DRAFT
Little Dixie Lake Conservation Area

Ten Year Area Management Plan
FY 2015-2024

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OVERVIEW

- **Official Area Name:** Little Dixie Lake Conservation Area, # 5904
- **Year of Initial Acquisition:** Initial land purchase occurred in 1957 when local sponsors acquired 448 acres and deeded these lands to the Missouri Department of Conservation (the Department. Little Dixie Lake was created in 1958 with the damming of Owl Creek.
- **Acreage:** 733 acres
- **County:** Callaway
- **Division with Administrative Responsibility:** Wildlife
- **Division with Maintenance Responsibility:** Wildlife
- **Statement of Purpose:**

A. Strategic Direction

Manage a quality sport fishery in Little Dixie Lake Conservation Area (CA). Provide research ponds and facilities for aquatic research. Provide facilities and infrastructure that invite public use. Manage forest, woodland and grassland resources that provide compatible public use.

B. Desired Future Condition

The desired future condition is quality forests and woodlands, healthy diverse grasslands, a productive sport fishery, additional ponds and facilities dedicated to aquatic research, fewer invasive species and infrastructure that is inviting to the public.

C. Federal Aid Statement

N/A

GENERAL INFORMATION AND CONDITIONS

I. Special Considerations

A. Priority Areas: None

B. Natural Areas: None

II. Important Natural Features and Resources

A. Species of Conservation Concern: None observed.

B. Caves: None

C. Springs: None

Other: Occurs in the Claypan Till Plains Land Type Association. This land type features well-developed claypan soils on a flat glacial till plain. The landscape was formerly prairie with flat or gently rolling topography and narrow belts of timber along the stream drainages (Nigh & Schroeder, 2002).

III. Existing Infrastructure

- headquarters building (containing three garage bays, workshop, storage room, bathroom and office)
- two-car garage
- storage building
- 205-acre lake – Little Dixie Lake
- 22 half--acre research ponds with inlet and outlet structures
- 26 ponds (6 fishing ponds, 20 fishless ponds)
- 5 privies, Americans with Disabilities Act (ADA) accessible
- 1 boat dock
- 1 fishing dock (ADA accessible)
- 1 concrete boat ramp
- 9 fishing jetties (ADA accessible)
- 5 parking lots (ADA accessible, 2 gravel lots with concrete pads)
- 1 pavilion #3683 (ADA accessible)
- 15 picnic tables (ADA accessible)
- 7 barbecue grills
- 24 boats for rent (available seasonally)
- 1 observation deck
- 0.4 mile trail - Dixie Woods Trail (ADA accessible asphalt pavement, 1 foot bridge)
- 4.5 mile trail - Shoreline Trail (22 footbridges)
- 6.0 mile trail - Boundary Trail
- 1 dry hydrant near boat ramp for Fire Department use

IV. Area Restrictions or Limitations

A. Deed Restrictions or Ownership Considerations: None

B. Federal Interest: Federal funds (Dingell-Johnson Sport Fish Restoration funds) were used in the development of this area, or a portion thereof. The Department must maintain the developed project throughout its useful life. Federal funds may also be used in the management of this land. Fish and wildlife agencies may not allow recreational activities and related facilities that would interfere with the purpose for which the State is managing the land. Other uses may be acceptable and must be assessed in each specific situation.

C. Easements: There is a highway road easement 50 feet wide located adjacent to State Routes J and RA. Electric, telephone, and water service lines and easements are located along the area boundary with Routes J, RA and County Road 228. A main water line valve is located near the welcome sign at the main entrance to the area. No other easements are known to exist.

D. Cultural Resource Findings: No known cultural resources.

E. Hazards and Hazardous Materials: None observed.

F. Endangered Species: None observed.

G. Boundary Issues: Establishing accurate and identifiable boundary markers is a priority for this area.

MANAGEMENT CONSIDERATIONS

V. Terrestrial Resource Management Considerations

Little Dixie Lake CA contains approximately 263 acres of forest and woodlands, 200 acres of grasslands and 50 acres of old field. The timber is of good size and varying quality, but its true value is its protection of the watershed and the aesthetic quality it provides along the hiking trails. Prescribed fire is used to manage some of the woodlands.

The stands of native grasses and forbs are almost entirely the result of conversion from fescue pastures. However, small acreages of remnant native grasses remain present on the west side of the lake. Fire is used to manage the grasslands. Native forbs have been interseeded to increase diversity. Seed collection by private contractors has been a common practice. Invasive species are present in the grasslands and are addressed annually. Conducting prescribed burns poses challenges and limits the conditions/times that burns can be conducted due to the close proximity of neighboring properties.

The old field acres are generally of poor quality with infestations of autumn olive, bush honeysuckle, and sericea lespedeza.

Challenges and Opportunities:

1) Manage diverse grasslands and remove invasive species.
2) Implement forest management.
3) Improve quality of old field habitats.

Management Objective 1: Manage diverse grasslands and remove invasive species.

Strategy 1: Use prescribed fire to stimulate the growth of native forbs and grasses (Wildlife).

Strategy 2: Monitor grasslands for invasive species and treat infestations with herbicides or cutting (Wildlife).

Strategy 3: Overseed native forbs into fields to increase plant diversity (Wildlife).

Strategy 4: Use contractors to harvest seeds for planting (Wildlife).

Strategy 5: Mechanically remove unwanted trees and shrubs (Wildlife).

Management Objective 2: Maintain healthy forests and woodlands with management emphasis on watershed protection.

Strategy 1: Monitor forests and woodlands for invasive species, diseases and insects. Suppress any infestations that may develop (Forestry).
Strategy 2: Retain and protect existing den trees (Forestry).
Strategy 3: Use selective thinning and prescribed fire to manage woodland acres (Wildlife).
Strategy 4: Retain wooded stream corridors to protect water quality, per the Department's stream management guidelines (2009) (Forestry).
Strategy 5: Conduct a forest inventory (scheduled for FY21) (Forestry).

Management Objective 3: Manage old field acres.

Strategy 1: Monitor old fields for invasive species and treat infestations with herbicide or by cutting (Wildlife).
Strategy 2: Use prescribed fire to maintain open fields (Wildlife).

VI. Aquatic Resource Considerations

The 205-acre Little Dixie Lake provides fishing opportunities for crappie, bass, bluegill, sunfish and catfish. Rental boats are available from April 15 to Oct. 15; and outboard motors in excess of 10 hp must be operated at a no-wake speed. Trails are maintained to provide easy access to shoreline locations and sunken evergreen trees provide fish habitat in the lake. Six ponds provide fishing opportunities. Another 20 ponds are fishless and help provide protection from siltation runoff into Little Dixie Lake. Owl Creek is the principle stream on the area; it flows into and out of Little Dixie Lake. In addition, 22 half-acre ponds (below the dam) are used for aquatic research.

Challenges and Opportunities:

1) Manage fish populations in Little Dixie Lake.
2) Manage area ponds.
3) Enhance diversity and quality of aquatic resources.
4) Provide the public with information concerning Little Dixie's aquatic resources.
5) Protect water quality and habitat in streams.
6) Maintain the research ponds and facilities.

Management Objective 1: Manage fish populations in Little Dixie Lake.

Strategy 1: Annually conduct spring electrofishing and fall trap-netting to monitor the populations of largemouth bass, crappie, bluegill and redear sunfish, as required for a Priority 1 impoundment such as Little Dixie Lake (Fisheries).
Strategy 2: Conduct hoop-netting for catfish every three years. Sample other species, i.e., lake sturgeon and paddlefish, as needed (Fisheries).

Strategy 3: Maintain current creel and length limits unless desired population indices aren't met for three consecutive years (Fisheries).

Management Objective 2: Manage area ponds.

Strategy 1: Conductelectrofish sampling in fishing ponds every three years, as required for Priority 3 impoundments (Fisheries).

Strategy 2: Monitor and develop management strategies for ponds capable of maintaining a sport fishery (Fisheries).

Strategy 3: Maintain fishless ponds to provide habitat for reptiles and amphibians (Fisheries).

Management Objective 3: Manage all aquatic resources to enhance diversity and quality.

Strategy 1: Enhance aquatic habitat by establishing desirable aquatic vegetation; removing undesirable vegetation; adding hard cover for fish, reptiles and amphibians; reducing siltation and maintaining good water quality (Fisheries).

Strategy 2: Annually construct fish attractors using hardwoods, red cedar or recycled Christmas trees (Fisheries).

Strategy 3: Annually survey aquatic plant coverage, density and species composition (Fisheries).

Strategy 4: Maintain aquatic vegetation between 20 to 30 percent of Little Dixie Lake's total surface area (Fisheries).

Strategy 5: Remove vegetation from selected bank fishing locations as needed (Fisheries).

Management Objective 4: Provide information to the public concerning Little Dixie's aquatic resources.

Strategy 1: Develop and maintain signs and displays that explain fishing regulations and management efforts (Fisheries).

Strategy 2: Maintain lake sturgeon information signs at all current signing locations (Fisheries).

Strategy 3: Distribute information via the statewide fishing report, Department publications, local newspapers and electronic media (Fisheries).

Management Objective 5: Protect water quality and habitat in streams.

Strategy 1: Maintain riparian corridors, enhance watershed management, improve in-stream habitat, and reduce streambank erosion throughout the area (Fisheries).

Strategy 2: Plan future facilities so they have minimal impact on streams and riparian corridors (Fisheries).

Strategy 3: Implement management strategies for streams with erosion problems (Fisheries).

Management Objective 6: Maintain the research ponds and facilities.

Strategy 1: Maintain fencing to prohibit public access to the research ponds (Wildlife).

Strategy 2: Maintain the research area to reflect the appearance and functional level commensurate with other conservation areas (Wildlife).

VII. Public Use Management Considerations

Challenges and Opportunities:

1) Maintain the area's use for the public. Little Dixie Lake CA receives considerable use from anglers, boaters, hikers and birders.

Management Objective 1: Maintain facilities that are safe and inviting to the public.

Strategy 1: The Region's east-side mowing crew will maintain facilities from April through October; Columbia District staff will provide maintenance through the winter months (Wildlife).

Strategy 2: Make repairs so that at least 10 rental boats are in service from April 15 to Oct. 15 (Wildlife).

Strategy 3: Check hiking trail conditions throughout the year. Plan workdays to repair flood damage, clear blow-downs, trim vegetation and post signs (Wildlife).

Strategy 4: Maintain the privies, jetty and boat dock in a clean and usable manner (Wildlife).

Strategy 5: Refill rock at end of boat ramp,as needed (Wildlife).

VIII. Administrative Considerations

Challenges and Opportunities:

1) The area gets a great deal of public use and can be, at times, a challenge to maintain since there are no permanent staff offices at the area.
2) The shallow cove makes the boat ramp difficult to use when the lake is low.
3) Rental boats are often not returned to their place of origin.
4) Collection of rental boat fees.
5) Land acquisition.

Management Objective 1: Provide a level of customer service that is acceptable to the public.

Strategy 1: East-side mowing crew will be primary contacts April through October (Wildlife).

Strategy 2: Columbia District staff will be primary contacts November through March (Wildlife).

Management Objective 2: Provide a boat ramp that is usable when the lake is low.

Strategy 1: Explore potential for building a replacement boat ramp in a different location (Design and Development).

Management Objective 3: Provide boats at the rental station.

Strategy 1: District staff will retrieve and maintain rental boats at least twice weekly (Wildlife).

Strategy 2: District staff will repair rental boats as needed (Wildlife).

Management Objective 4: Collect boat rental fees.

Strategy 1: Callaway County Conservation Agent(s) are responsible for enforcing boat rentals and fee collection (Protection).

Lands Proposed for Acquisition:

When available, adjacent land may be considered for acquisition from willing sellers. Tracts that improve area access, protect water quality, provide public recreational opportunities, contain unique natural communities or species of conservation concern, or meet other Department priorities, as identified in the annual Department land acquisition priorities, may be considered (Wildlife).

MANAGEMENT TIMETABLE

Strategies are considered ongoing unless listed in the following table.

	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Terrestrial Resources Management										
Objective 2										
Strategy 5							X			
Aquatic Resources Management										
Objective 1										
Strategy 2		X			X			X		
Objective 2										
Strategy 1		X			X			X		

APPENDICES

Area Background:
Little Dixie Lake CA is located near the southern edge of the Glaciated Plains region of northern Missouri. The area historically contained a mix of prairie and forest. Most of the site likely supported a forest cover of varying density. The more upland sites were probably a savanna with widely spaced oaks and a prairie-like ground cover.

The Little Dixie Lake name is rooted in history going back to the early 1800s when Daniel Boone established a path from St. Charles County to the salt licks of Howard County. A wagon road was established over Boone's path and it became known as the Booneslick Trail. This historic trail passed through Millersburg within one-eigth of a mile of the conservation area. Immigrants, primarily from Kentucky, Tennessee and Virginia, found lands rich in natural resources and the promise of greater prosperity along the trail route. These settlers brought with them the political, cultural, and economic ties to their original homes below the Mason-Dixon Line. The region, including Callaway County, was referred to as "Little Dixie" in recognition of its southern heritage.

In 1957, local private sponsors purchased 448.1 acres and deeded these lands to the Department. In 1970, an additional 21 acres were purchased. The Department sold 1.1 acres to the Millersburg Fire Protection District in 1981. In 1992, 156 acres were purchased from the Arends family, and the 110-acre Meredith Tract was acquired in 1996.

Little Dixie Lake
Aquatic resources comprise nearly 30 percent of the Little Dixie Lake CA. The largest single feature on the area is 205-acre Little Dixie Lake. In 1957, local private sponsors purchased land and donated 448 acres to the Department to provide "land for a lake site north of Millersburg, Missouri, which is to be used and developed by the Missouri Conservation Commission for public purposes" with "the main objective of Little Dixie Lake being to provide a place where the public can fish without disturbance from those practicing other types of water recreation." Little Dixie Lake's construction was completed in 1958 by the Department with the impounding of Owl Creek. Little Dixie Lake has 5.5 miles of shoreline, a volume of 1,845 acre-feet, maximum depth of 28 feet and mean depth of 9 feet (Figure 1). Forty-two percent of the lake's surface area is within the littoral zone (≤ 8 feet of depth at full pool). This impoundment is the largest public lake within a 40-mile radius of the city of Columbia.

Numerous trees were left standing or placed in large piles throughout the lake basin during construction. Much of this habitat remains as stumps and logs. Since 1984, thousands of trees have been placed in the lake to create or maintain brush piles for fish attractors and habitat. Popular bank fishing areas that lacked fish-attracting habitat were enhanced by placing used Christmas trees, red cedars and hardwood trees within casting distance of the shoreline at 35 locations.

Little Dixie Lake opened to the public for fishing in 1960 with no mandatory fishing regulations. As a result, approximately 50 percent of the largemouth bass population was harvested in the first four days the lake was open to fishing. Over 3,700 bass were harvested in just the first two days of fishing. This excessive harvest of bass nearly destroyed the lake's fishery. It took 10 years of intensive management using various techniques, including fishing regulation changes, to restore balance to Little Dixie Lake's bass population and fishery.

Little Dixie Lake maintains viable fisheries for largemouth bass, white crappie, bluegill, redear sunfish, channel catfish and blue catfish. There have been 25 species of fish stocked into the lake at one time or another since it was opened to fishing; most of these species were "leftovers" from projects done in the Fisheries research ponds below Little Dixie Lake's dam. During 2011 and 2012 fish sampling, there were 19 species captured including largemouth bass, bluegill, redear sunfish, white crappie, black crappie, green sunfish, common carp, channel catfish, blue catfish, lake sturgeon, paddlefish, gizzard shad, fathead minnow, brook silverside, hybrid sunfish (green sunfish x bluegill), grass carp, black bullhead, yellow bullhead and golden shiner. Lake sturgeon, state listed endangered, were originally stocked in the lake in 1984 and some of these fish have now reached 75 to 85 pounds in size. Some of the paddlefish sampled in 2012 ranged from 125 to 145 pounds. The lake currently supports a stockpiled bass population that is dominated by too many small bass (≤12"). However, there are still good numbers of larger bass up to 10 pounds and a high density of larger bluegill averaging around 8". There is also a very good channel catfish and blue catfish population in the lake with most fish averaging between 18" to 24". Anglers have reported catching large blue catfish up to 60 pounds.

The lake has had periodic problems with muddiness and/or aquatic vegetation since its construction. To curb autochthonous turbidity, 27 percent of the lake's eroding shoreline was covered with large rock (riprap in the mid-1970s. Nearly the entire lake shoreline is now stabilized with riprap or natural vegetation. Eurasian water milfoil has periodically become overly abundant in Little Dixie Lake, but it has been successfully controlled with the introduction of grass carp and spot-treatment with aquatic herbicides. Over the last few years American lotus has become established in the lake, but has been controlled with herbicide applications. In an effort to establish more desirable aquatic vegetation in the lake, water willow, arrowhead, square-stem spike rush, and pink fragrant water lily were transplanted in 1995. Water willow has become well established and is providing good fish habitat and excellent shoreline erosion protection. Other aquatic plants that have been observed at the lake include water primrose, coontail, leafy pondweed, American pondweed, pickerel weed, thalia, sweet flag, cattails, southern naiad, water smartweed, filamentous algae, bluegreen algae, duckweed, watermeal, rose mallow, wild iris and buttonbush.

Most of the angling is done from boats; outboard motors in excess of 10 hp must be operated at a no-wake speed. Considerable bank fishing also occurs along the dam, jetties, boat ramp and fishing dock; and around the east and northwest parking lots. The fishing regulations at the lake are statewide regulations. These regulations include a 12" to 15" slot length limit for largemouth bass,

and daily creel limits for bass of 6; channel catfish, blue catfish, flathead catfish of 4 in the aggregate; crappie of 30, and all other fish of 20 in the aggregate.

Research Ponds

In 1960, 22 rectangular, half-acre ponds were constructed immediately below the base of Little Dixie Lake's dam along Owl Creek. These ponds were built specifically for aquatic research. Each pond has a mean depth of approximately 4 feet and a maximum depth of 8 feet. The water levels of each pond can be adjusted independently of the others via a series of pipes and valves from the lake. The ponds are drained via pipes and valves into a channelized section of Owl Creek. The research pond complex is fenced and gated and public access is restricted.

The Department research pond studies have provided valuable information on pond stocking rates and combinations, aquatic vegetation control, effects of pesticides in aquatic environments, intra and interspecific fish competition, tag retention in fish, and other aquatic research oriented projects. The ponds have also been used to culture muskellunge, smallmouth bass, lake sturgeon and other fish utilized in fisheries research and management efforts. This facility has and continues to prove valuable as a site for important research studies that assist biologists with the management of the State's aquatic resources.

Area Ponds

In 1960, there were nine small fishless ponds on the area totaling 0.4 acres of water. Seven of these ponds were constructed primarily for erosion control. The other two ponds function as the primary and secondary sewage treatment lagoons for the area. An additional six small ponds were constructed in 1987. In 1989, five more ponds were built. To date, there are a total of 20 fishless ponds totaling 1.0 acres of water on the area (Figure 2). The fishless ponds on the area range in size from 0.01 to 0.15 acres with a mean surface acreage of about 0.05 acres. Maximum pond depths range from 1.0 to 8.5 feet with a mean maximum depth of 3.5 feet. Seven of the ponds are surrounded by old field habitat, eight by woodlands, and the remaining five are within the grassland habitat. Approximately 95 percent of the area's terrestrial resource is within 0.25 miles of a pond. Only 25 acres of Little Dixie Lake Conservation Area is more than 0.25 miles from fishless water.

Several ponds contain unusual or rare plant species. One pond has a thriving population of Thalia, a rare plant of the southeast lowlands of Missouri. This is the farthest north in Missouri where this plant is known to survive. Other unusual or showy plants found in some of the ponds are bladderwort, copper iris, southern blue flag, fragrant water lily (both pink and white blooming), pickerel weed and common reed.

Although many species of mammals, birds and reptiles are occasional to frequent visitors to the ponds, insects and amphibians are the primary users and residents of the ponds. Some common amphibians that utilize the ponds are American toads, central newts, smallmouth salamanders,

chorus frogs, cricket frogs, leopard frogs and bullfrogs. Less common or unusual amphibians include crayfish frogs, and spotted and tiger salamanders.

Several of the circa 1960 ponds received plant introductions in the mid-1970s. More intensive management of the ponds started concurrently with the construction of the new ponds in 1987. Aquatic vegetation such as bladderwort, pickerel weed, water lilies and arrowhead were introduced into the new ponds. Cottonwood and bald cypress saplings were planted around the shorelines of many of these new ponds. Hardwood logs and limbs were placed along the shoreline of the new ponds so that half of the woody material is submerged with the remaining above the waterline on the shore. Salamander eggs and larvae have been transferred from ponds with existing populations to newly constructed ponds.

There are also six larger ponds on the area that have bass and bluegill present. These ponds range in size from 0.3 to 2.0 acres and total 4.3 acres. The largest is General Lee's Pond on the north end of the area which has a fishery containing bass, bluegill, channel catfish and green sunfish. The rest of the fishing ponds only have fair fisheries due to their small size and heavy fishing pressure. Combined, there are 26 ponds on the area which total 5.3 acres (Table 1).

Streams

There are seven small intermittent streams on the area, totalling approximately 1.7 miles. These streams, which are on the southeastern margin of the Dissected Till Plains Physiographic Region, originate on level uplands underlain by shales and descend into rolling to hilly terrain underlain by limestone. All streams on the area have relatively good riparian corridors. There are four first-order (all 0.1 mile in length), two second-order (0.3 and 0.5 miles), and one third-order (Owl Creek, 0.5 miles) streams on the area. Owl Creek is a third-order tributary of Cedar Creek and is the principle aquatic stream resource on the area. Owl Creek has an average gradient of 18.3 feet per mile. Prior to the construction of the Little Dixie Lake and the Fisheries research pond complex, Owl Creek was primarily an intermittent stream. However, since the research pond complex has been in operation, water releases from the ponds and holding tanks have provided some flow in Owl Creek below the dam during most of the year.

The 2,200-acre watershed of Little Dixie Lake lies primarily to the northeast of the lake. Except for approximately 70 acres below the lake's dam, all of the Little Dixie Lake CA drains into the lake. Land use patterns in the lake's watershed are similar to many other conservation areas in the northern part of the state. Approximately 25 percent of the watershed is in private row-crop production. Twenty-nine percent of the watershed is in private pasture and haylands. Only 2 percent of the private lands in the watershed are forested. Six percent of the watershed is used for residential purposes or public roads. Approximately, 25 percent of the remaining watershed is located within the conservation area.

There is little available information regarding the area streams or the aquatic fauna they support primarily because of their intermittent nature. Fish populations exist in Owl Creek below Little Dixie Lake's dam due to increased flow primarily from the research ponds and holding tanks. This section of stream contains fish biota typical of a prairie, lower Missouri River headwater stream. Additional fish are periodically introduced into this stream via emigration from the lake and from the research ponds during draining and harvest operations. Fish sampling by Department fisheries biologists in nearby Cedar Creek have yielded species such as creek chub, common shiner, red shiner, Western redfin shiner, golden shiner, sand shiner, ghost shiner, fathead minnow, bluntnose minnow, suckermouth minnow, blackstripe topminnow, northern orangethroat darter, johnny darter, striped fantail darter, western mosquitofish, Ozark logperch, brook silverside, white sucker, central stoneroller, slender madtom, redear sunfish, longear sunfish, bluegill, green sunfish, hybrid sunfish (green sunfish x bluegill), golden redhorse, chestnut lamprey, black bullhead, yellow bullhead, channel catfish, common carp, smallmouth bass, white crappie, black crappie, spotted bass, largemouth bass and walleye. Other fish species found near the confluence of Owl Creek and Cedar Creek having Missouri River influence include western silvery minnow, emerald shiner, gizzard shad, smallmouth buffalo, bigmouth buffalo, black buffalo, longnose gar, shortnose gar, shorthead redhorse, quillback, river carpsucker, freshwater drum, white bass and walleye. No threatened or endangered species have been collected on any of the area streams in recent surveys.

Regulations

Statewide fishing regulations apply. See Department regulation code book or regulations posted on the Web at http://www.sos.mo.gov/adrules/csr/current/3csr/3c10-11 or http://www.sos.mo.gov/adrules/csr/current/3csr/3c10-12. Any exceptions to these regulations will be posted by sign on the area.

Angler Use

Anglers are the largest single user group on the Little Dixie Lake Conservation Area. While conducting creel surveys in the 1980s, the Department found that anglers made an average of over 21,000 fishing trips to the area from April through October. The highest recorded total trips to Little Dixie was recorded in 1987 when the public made 129,000 trips. From 1973 to 1991, total public use increased on average 5.3 percent per year. It is estimated that since Little Dixie Lake CA opened in 1960, the Area has hosted over 5 million trips. Fishing pressure at the lake averaged 242 hours/acre in the early 1990s, which compares to 45 hours/acre on Lake of the Ozarks. At present, the lake continues to receive heavy fishing pressure.

Current Land and Water Types

Land/Water Type	Acres	Miles	% of Area
Forest	248		34
Grassland	210		29
Lake	205		28
Old Field	40		5
Research Ponds	20		3
Infrastructure	10		1
Total	**733**		**100**
Stream Frontage		2	

References:

Missouri Department of Conservation. (2009). *Watershed and stream management guidelines for lands and waters managed by Missouri Department of Conservation.* Jefferson City, Missouri: Missouri Department of Conservation.

Nigh, T.A., & Schroeder, W.A.. (2002). *Atlas of Missouri ecoregions.* Jefferson City, Missouri: Missouri Department of Conservation.

Stuckey, N. (1997). Fisheries guidelines for stream side management zones: Guidelines for recommending stream side management zones on private land. Missouri Department of Conservation.

Maps:

Figure 1: Area Map
Figure 2: Topographic Map
Figure 3: Current Infrastructure – North
Figure 4: Current Infrastructure – Middle
Figure 5: Current Infrastructure – South
Figure 6: Landcover Type

Figure 1: Area Map

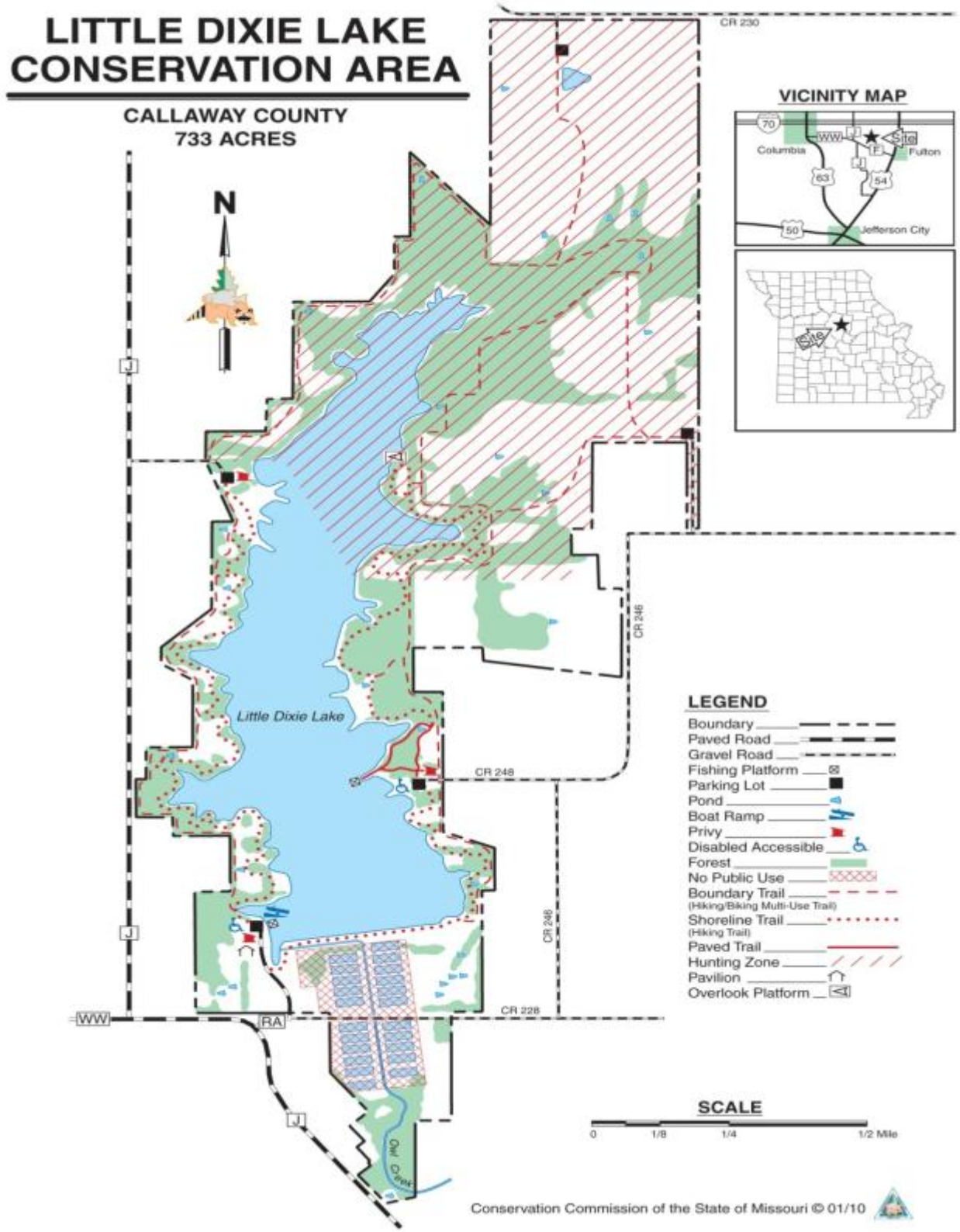


Figure 2: Topographic Map

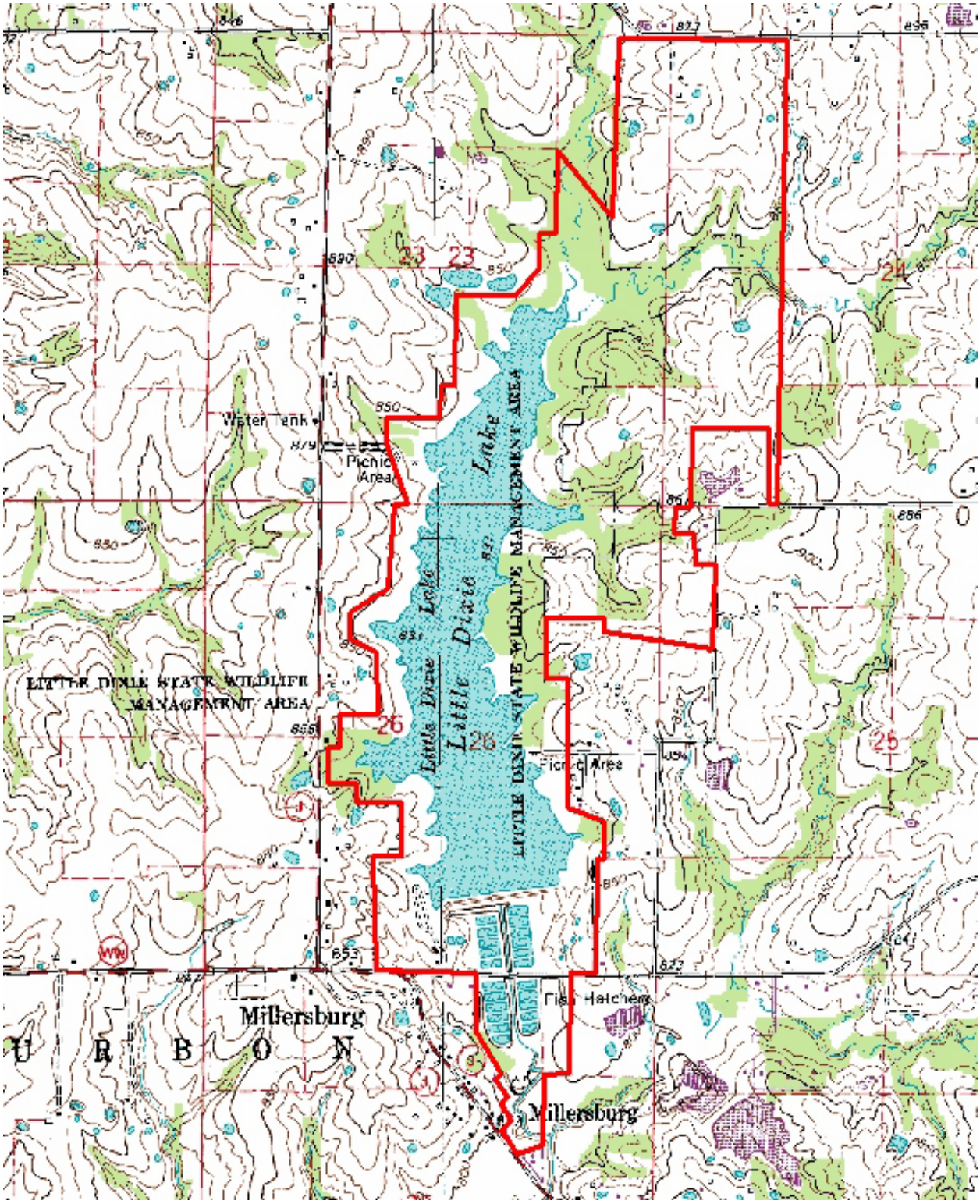


Figure 3: Current Infrastructure – North

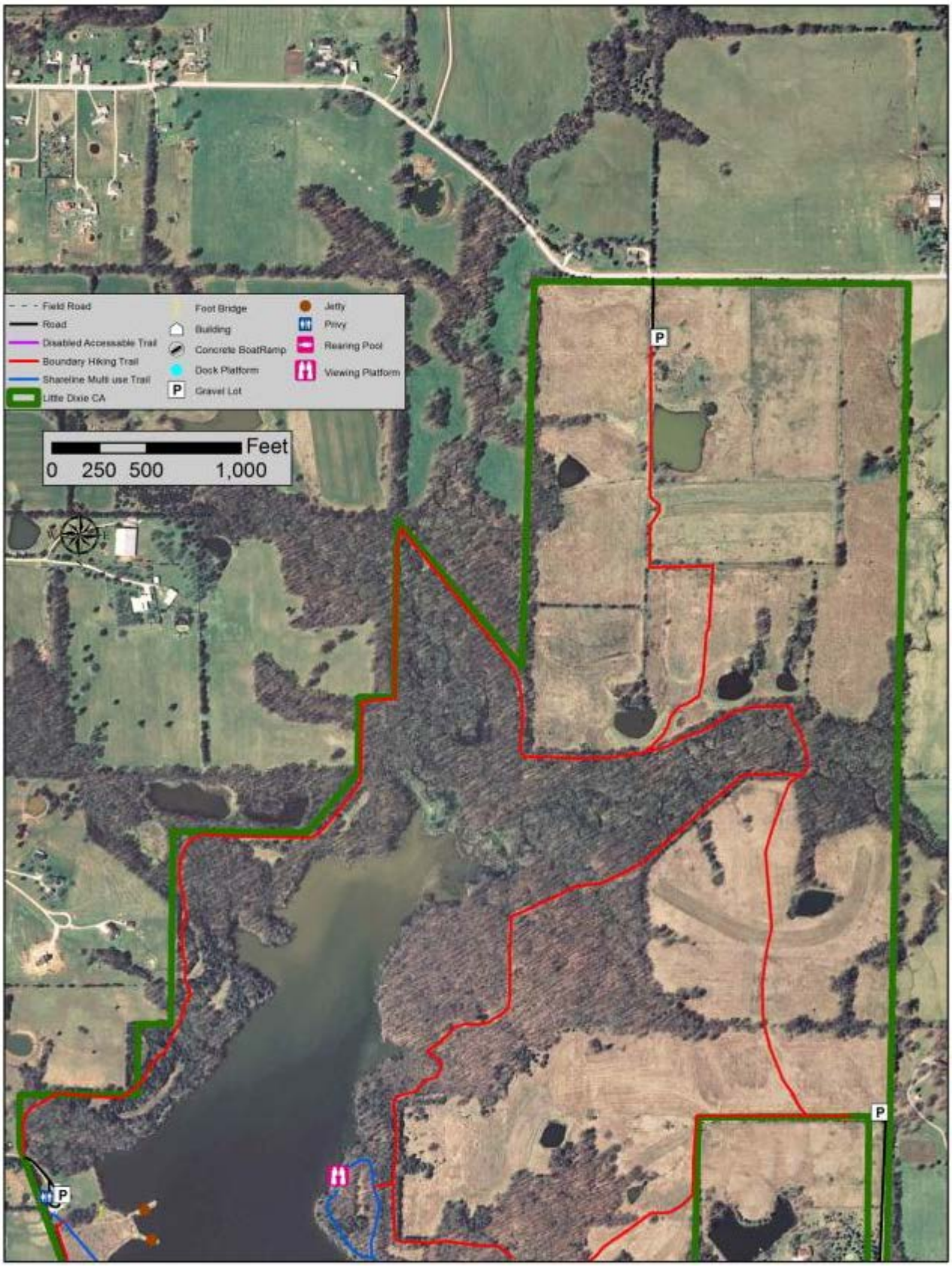


Figure 4: Current Infrastructure - Middle

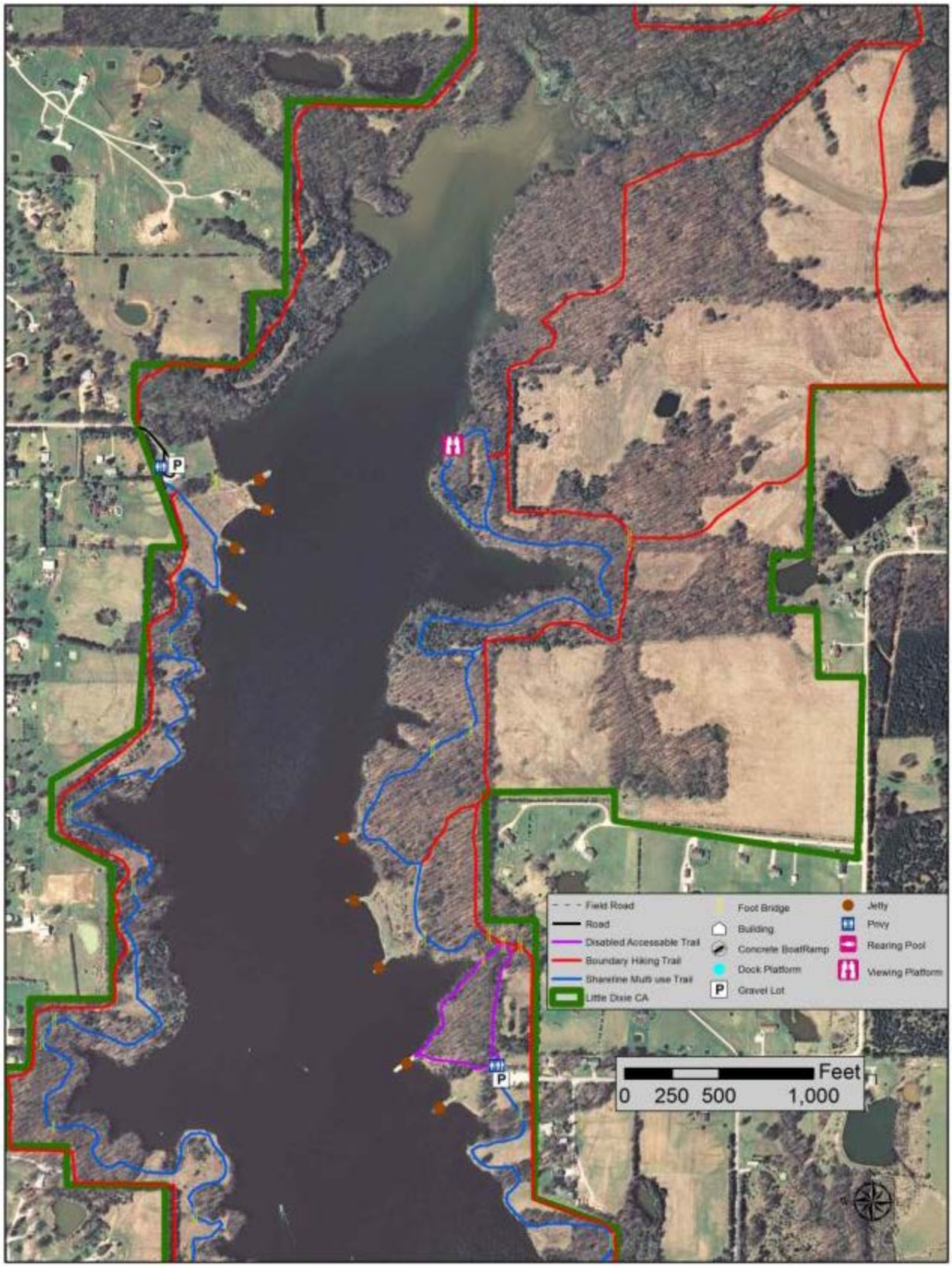


Figure 5: Current Infrastructure - South

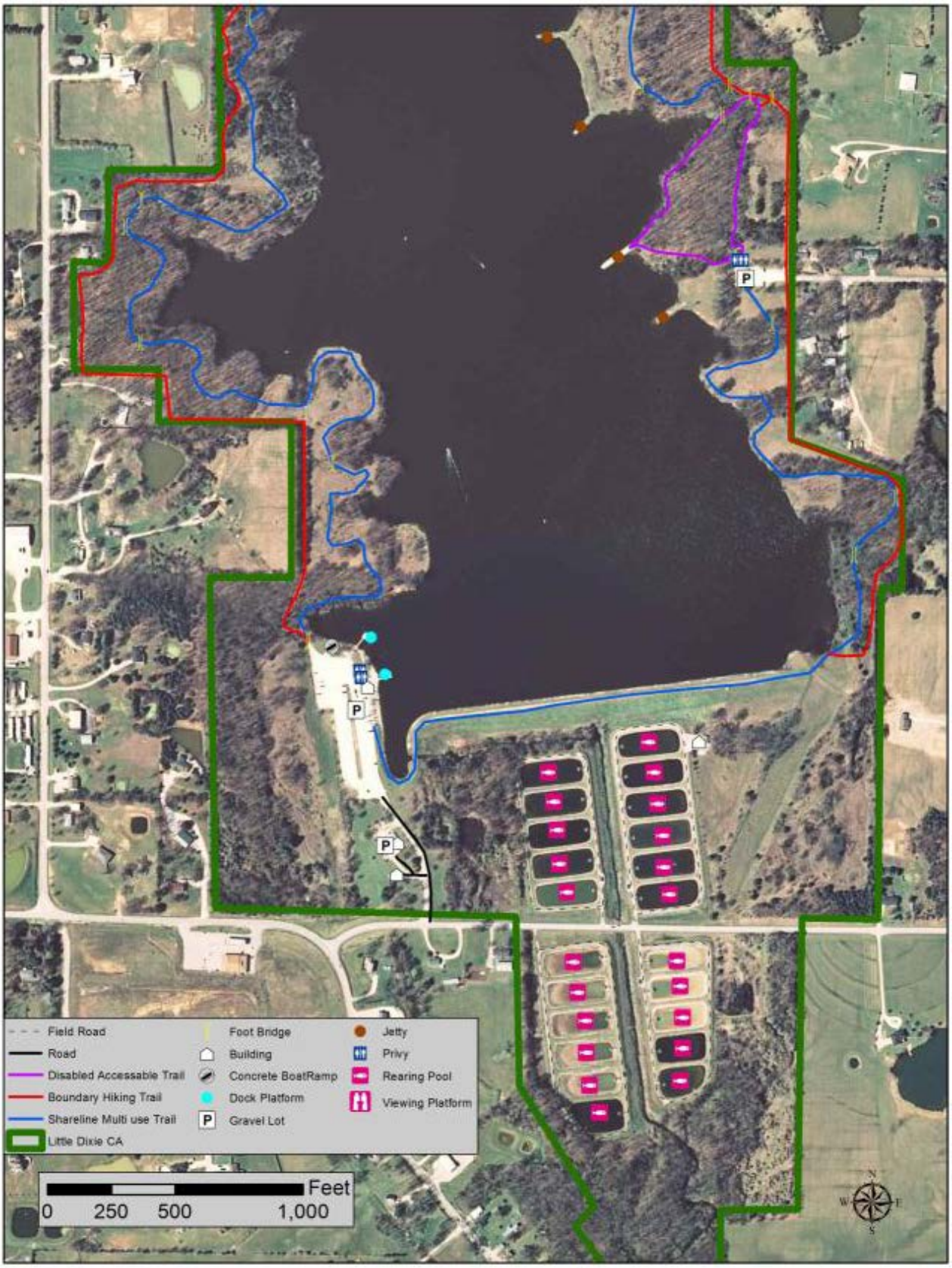
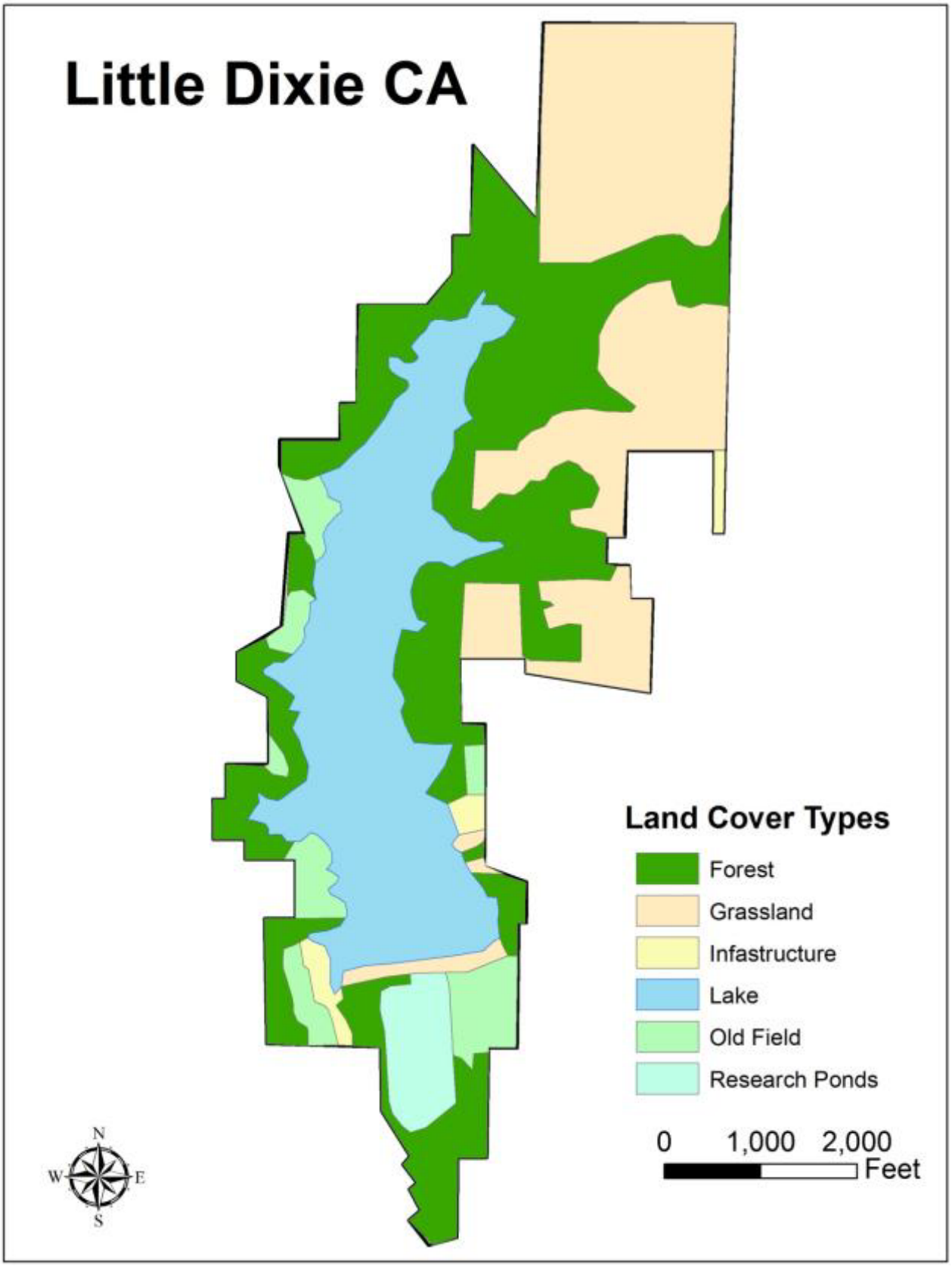


Figure 6: Landcover Type



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